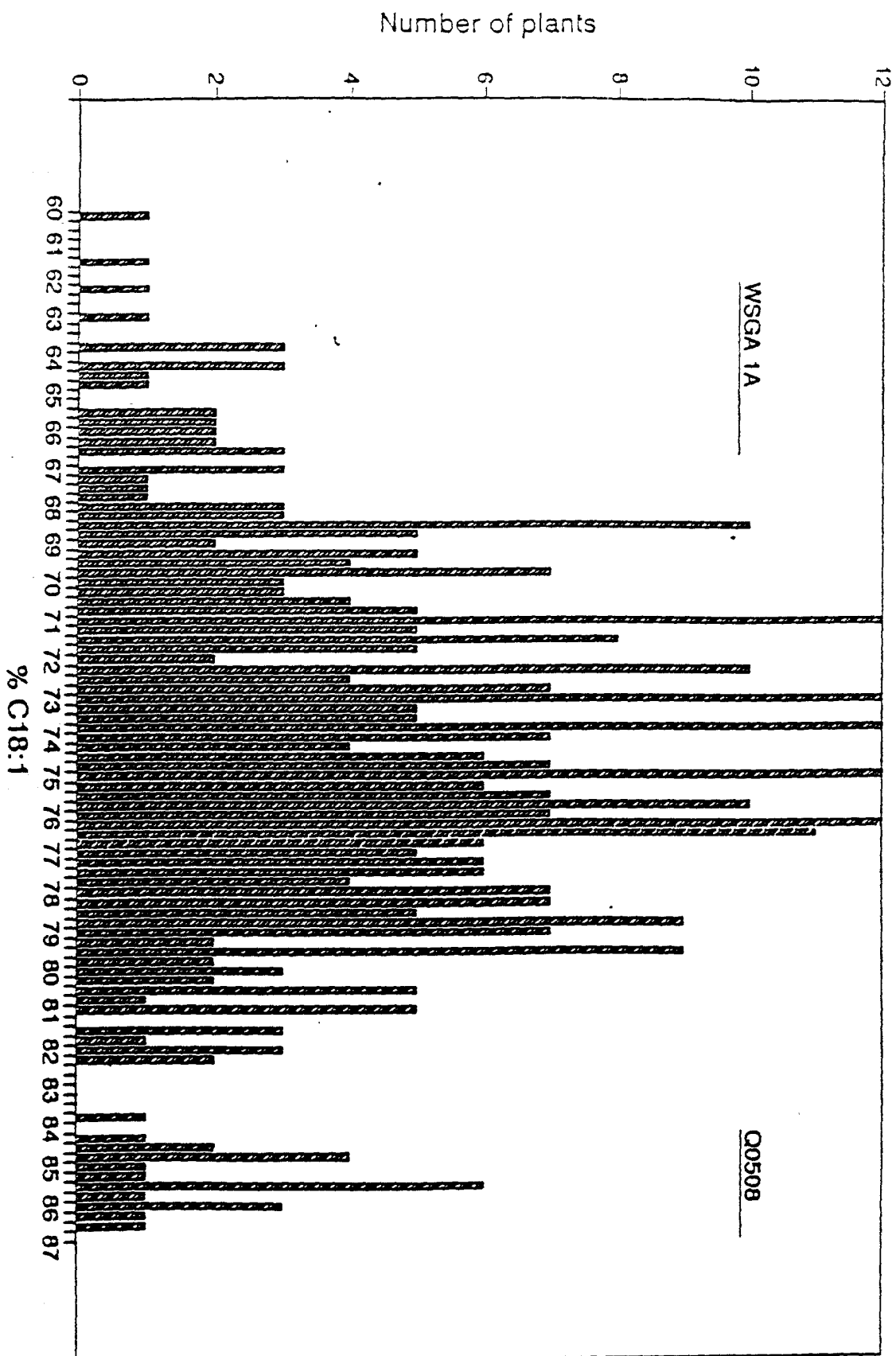


Fig. 1 C18:1 Frequencies
for 92EF (WSGA 1A X Q0508)



0971904.012901

	10	20	30	40		
1	ATGGG	TGCAGG	TGGAAGA	AATGCAAG	TGTCTCCTCCCTCCA	Fad2-D wt
1	ATGGG	TGCAGG	TGGAAGA	AATGCAAG	TGTCTCCTCCCTCCA	Fad2-D (GA316) IMC129
1	ATGGG	TGCAGG	TGGAAGA	AATGCAAG	TGTCTCCTCCCTCCA	Fad2-F wt
1	ATGGG	TGCAGG	TGGAAGA	AATGCAAG	TGTCTCCTCCCTCCA	Fad2-F (TA515) Q508
1	ATGGG	TGCAGG	TGGAAGA	AATGCAAG	TGTCTCCTCCCTCCA	Fad2-F (GA908) Q4275
	50	60	70	80		
41	AAAAG	TCTGAA	ACCGACA	AACATCA	AGCGCGGTACCCCTGCCGA	Fad2-D wt
41	AAAAG	TCTGAA	ACCGACA	AACATCA	AGCGCGGTACCCCTGCCGA	Fad2-D (GA316) IMC129
41	AGAAG	TCTGAA	ACCGACA	ACCATCA	AGCGCGGTACCCCTGCCGA	Fad2-F wt
41	AGAAG	TCTGAA	ACCGACA	ACCATCA	AGCGCGGTACCCCTGCCGA	Fad2-F (TA515) Q508
41	AGAAG	TCTGAA	ACCGACA	ACCATCA	AGCGCGGTACCCCTGCCGA	Fad2-F (GA908) Q4275
	90	100	110	120		
81	GACAC	CGCCCT	TTCACT	GTCTCG	GAGAACTCAAGAAAGCAATC	Fad2-D wt
81	GACAC	CGCCCT	TTCACT	GTCTCG	GAGAACTCAAGAAAGCAATC	Fad2-D (GA316) IMC129
81	GACAC	CGCCCT	TTCACT	GTCTCG	GAGAACTCAAGAAAGCAATC	Fad2-F wt
81	GACAC	CGCCCT	TTCACT	GTCTCG	GAGAACTCAAGAAAGCAATC	Fad2-F (TA515) Q508
81	GACAC	CGCCCT	TTCACT	GTCTCG	GAGAACTCAAGAAAGCAATC	Fad2-F (GA908) Q4275
	130	140	150	160		
121	CCACC	GGCACT	GTTTCAA	ACGCTCG	ATCCCTCGCTCTTTCT	Fad2-D wt
121	CCACC	GGCACT	GTTTCAA	ACGCTCG	ATCCCTCGCTCTTTCT	Fad2-D (GA316) IMC129
121	CCACC	GGCACT	GTTTCAA	ACGCTCG	ATCCCTCGCTCTTTCT	Fad2-F wt
121	CCACC	GGCACT	GTTTCAA	ACGCTCG	ATCCCTCGCTCTTTCT	Fad2-F (TA515) Q508
121	CCACC	GGCACT	GTTTCAA	ACGCTCG	ATCCCTCGCTCTTTCT	Fad2-F (GA908) Q4275
	170	180	190	200		
161	CCTAC	CTCATC	TGGGAC	ATCATCA	TAGCCTCCTGCTTCTA	Fad2-D wt
161	CCTAC	CTCATC	TGGGAC	ATCATCA	TAGCCTCCTGCTTCTA	Fad2-D (GA316) IMC129
161	CCTAC	CTCATC	TGGGAC	ATCATCA	TAGCCTCCTGCTTCTA	Fad2-F wt
161	CCTAC	CTCATC	TGGGAC	ATCATCA	TAGCCTCCTGCTTCTA	Fad2-F (TA515) Q508
161	CCTAC	CTCATC	TGGGAC	ATCATCA	TAGCCTCCTGCTTCTA	Fad2-F (GA908) Q4275
	210	220	230	240		
201	CTACG	TGCGCC	ACCACCT	TACTTCC	CTCTCCTCCCTCACCCCT	Fad2-D wt
201	CTACG	TGCGCC	ACCACCT	TACTTCC	CTCTCCTCCCTCACCCCT	Fad2-D (GA316) IMC129
201	CTACG	TGCGCC	ACCACCT	TACTTCC	CTCTCCTCCCTCACCCCT	Fad2-F wt
201	CTACG	TGCGCC	ACCACCT	TACTTCC	CTCTCCTCCCTCACCCCT	Fad2-F (TA515) Q508
201	CTACG	TGCGCC	ACCACCT	TACTTCC	CTCTCCTCCCTCACCCCT	Fad2-F (GA908) Q4275
	250	260	270	280		
241	CTCTC	CCTACT	TTCGCC	CTGGCC	TCTCTACTGGGGCCTGCCAAG	Fad2-D wt
241	CTCTC	CCTACT	TTCGCC	CTGGCC	TCTCTACTGGGGCCTGCCAAG	Fad2-D (GA316) IMC129
241	CTCTC	CCTACT	TTCGCC	CTGGCC	TCTCTACTGGGGCCTGCCAAG	Fad2-F wt
241	CTCTC	CCTACT	TTCGCC	CTGGCC	TCTCTACTGGGGCCTGCCAAG	Fad2-F (TA515) Q508
241	CTCTC	CCTACT	TTCGCC	CTGGCC	TCTCTACTGGGGCCTGCCAAG	Fad2-F (GA908) Q4275

FIG. 2A

	290	300	310	320				
281	GCTGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACCACTG	Fad2-D wt			
281	GCTGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACCAAGT	Fad2-D (GA316) IMC129			
281	GGTGGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	Fad2-F wt			
281	GGTGGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	Fad2-F (TA515) Q508			
281	GGTGGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	Fad2-F (GA908) Q4275			
	330	340	350	360				
321	CGGCCACCA	CGCCTTCAG	CGACTACCA	AGTGGCTGG	ACGAC	Fad2-D wt		
321	CGGCCACCA	CGCCTTCAG	CGACTACCA	AGTGGCTGG	ACGAC	Fad2-D (GA316) IMC129		
321	CGGCCACCA	CGCCTTCAG	CGACTACCA	AGTGGCTTG	ACGAC	Fad2-F wt		
321	CGGCCACCA	CGCCTTCAG	CGACTACCA	AGTGGCTTG	ACGAC	Fad2-F (TA515) Q508		
321	CGGCCACCA	CGCCTTCAG	CGACTACCA	AGTGGCTTG	ACGAC	Fad2-F (GA908) Q4275		
	370	380	390	400				
361	ACCGTCGGGC	CTCATCTTCC	ACTCCTTC	CTCCTCGT	CCCTT	Fad2-D wt		
361	ACCGTCGGGC	CTCATCTTCC	ACTCCTTC	CTCCTCGT	CCCTT	Fad2-D (GA316) IMC129		
361	ACCGTCGGGT	CTCATCTTCC	ACTCCTTC	CTCCTCGT	CCCTT	Fad2-F wt		
361	ACCGTCGGGT	CTCATCTTCC	ACTCCTTC	CTCCTCGT	CCCTT	Fad2-F (TA515) Q508		
361	ACCGTCGGGT	CTCATCTTCC	ACTCCTTC	CTCCTCGT	CCCTT	Fad2-F (GA908) Q4275		
	410	420	430	440				
401	ACTTCTCCT	TGGAAGTAC	AGTCATCG	ACGCCACC	ATTCCAA	Fad2-D wt		
401	ACTTCTCCT	TGGAAGTAC	AGTCATCG	ACGCCACC	ATTCCAA	Fad2-D (GA316) IMC129		
401	ACTTCTCCT	TGGAAGTAC	AGTCATCG	ACGCCACC	ATTCCAA	Fad2-F wt		
401	ACTTCTCCT	TGGAAGTAC	AGTCATCG	ACGCCACC	ATTCCAA	Fad2-F (TA515) Q508		
401	ACTTCTCCT	TGGAAGTAC	AGTCATCG	ACGCCACC	ATTCCAA	Fad2-F (GA908) Q4275		
	450	460	470	480				
441	CACTGGCT	CCCTCGAG	AGAGAGAC	GAAAGTG	TTTGTCCCC	AAG	Fad2-D wt	
441	CACTGGCT	CCCTCGAG	AGAGAGAC	GAAAGTG	TTTGTCCCC	AAG	Fad2-D (GA316) IMC129	
441	CACTGGCT	CCCTCGAG	AGAGAGAC	GAAAGTG	TTTGTCCCC	AAG	Fad2-F wt	
441	CACTGGCT	CCCTCGAG	AGAGAGAC	GAAAGTG	TTTGTCCCC	AAG	Fad2-F (TA515) Q508	
441	CACTGGCT	CCCTCGAG	AGAGAGAC	GAAAGTG	TTTGTCCCC	AAG	Fad2-F (GA908) Q4275	
	490	500	510	520				
481	AAGAAGT	CAGACATCA	AAGTGGT	ACGGCAAG	TACCTCA	ACA	Fad2-D wt	
481	AAGAAGT	CAGACATCA	AAGTGGT	ACGGCAAG	TACCTCA	ACA	Fad2-D (GA316) IMC129	
481	AAGAAGT	CAGACATCA	AAGTGGT	ACGGCAAG	TACCTCA	ACA	Fad2-F wt	
481	AAGAAGT	CAGACATCA	AAGTGGT	ACGGCAAG	TACCTCA	ACA	Fad2-F (TA515) Q508	
481	AAGAAGT	CAGACATCA	AAGTGGT	ACGGCAAG	TACCTCA	ACA	Fad2-F (GA908) Q4275	
	530	540	550	560				
521	ACCCTTT	TGGGACGC	ACCCTGAT	GTTAAC	GGTTCA	AGTTCA	C	Fad2-D wt
521	ACCCTTT	TGGGACGC	ACCCTGAT	GTTAAC	GGTTCA	AGTTCA	C	Fad2-D (GA316) IMC129
521	ACCCTTT	TGGGACGC	ACCCTGAT	GTTAAC	GGTTCA	AGTTCA	C	Fad2-F wt
521	ACCCTTT	TGGGACGC	ACCCTGAT	GTTAAC	GGTTCA	AGTTCA	C	Fad2-F (TA515) Q508
521	ACCCTTT	TGGGACGC	ACCCTGAT	GTTAAC	GGTTCA	AGTTCA	C	Fad2-F (GA908) Q4275

FIG. 2B

	570	580	590	600	
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGG	Fad2-D wt			
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGG	Fad2-D (GA316)	IMC129		
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGGA	Fad2-F wt			
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGGA	Fad2-F (TA515)	Q508		
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGGA	Fad2-F (GA908)	Q4275		
	610	620	630	640	
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCCACCCCA	Fad2-D wt			
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCCACCCCA	Fad2-D (GA316)	IMC129		
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCCACCCCA	Fad2-F wt			
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCCACCCCA	Fad2-F (TA515)	Q508		
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCCACCCCA	Fad2-F (GA908)	Q4275		
	650	660	670	680	
641	ACGCTCCCATCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-D wt			
641	ACGCTCCCATCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-D (GA316)	IMC129		
641	ACGCTCCCATCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-F wt			
641	ACGCTCCCATCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-F (TA515)	Q508		
641	ACGCTCCCATCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-F (GA908)	Q4275		
	690	700	710	720	
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTC	Fad2-D wt			
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTC	Fad2-D (GA316)	IMC129		
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTC	Fad2-F wt			
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTC	Fad2-F (TA515)	Q508		
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTC	Fad2-F (GA908)	Q4275		
	730	740	750	760	
721	TACCGCTACGCTGCTGTCCAAGGAGTTGCCTCGATGGTCT	Fad2-D wt			
721	TACCGCTACGCTGCTGTCCAAGGAGTTGCCTCGATGGTCT	Fad2-D (GA316)	IMC129		
721	TTCCGTTACGCCCGCCGCGCAGGGAGTGGCCTCGATGGTCT	Fad2-F wt			
721	TTCCGTTACGCCCGCCGCGCAGGGAGTGGCCTCGATGGTCT	Fad2-F (TA515)	Q508		
721	TTCCGTTACGCCCGCCGCGCAGGGAGTGGCCTCGATGGTCT	Fad2-F (GA908)	Q4275		
	770	780	790	800	
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAACGGGTTCCT	Fad2-D wt			
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAACGGGTTCCT	Fad2-D (GA316)	IMC129		
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAATGGTTTCCT	Fad2-F wt			
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAATGGTTTCCT	Fad2-F (TA515)	Q508		
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAATGGTTTCCT	Fad2-F (GA908)	Q4275		
	810	820	830	840	
801	AGTTTTGATCACTTACTTGCAGCACACGTCATCCTTCCCTG	Fad2-D wt			
801	AGTTTTGATCACTTACTTGCAGCACACGTCATCCTTCCCTG	Fad2-D (GA316)	IMC129		
801	CGTGTTGATCACTTACTTGCAGCACACGTCATCCTTCCCTG	Fad2-F wt			
801	CGTGTTGATCACTTACTTGCAGCACACGTCATCCTTCCCTG	Fad2-F (TA515)	Q508		
801	CGTGTTGATCACTTACTTGCAGCACACGTCATCCTTCCCTG	Fad2-F (GA908)	Q4275		

FIG. 2C

	850	860	870	880	
841	CCTCACTATGACTCGTCTGAGTGGGATTGGTTGAGGGGAG				Fad2-D wt
841	CCTCACTATGACTCGTCTGAGTGGGATTGGTTGAGGGGAG				Fad2-D (GA316) IMC129
841	CCTCACTACGATTTCGTCCGAGTGGGATTGGTTGAGGGGAG				Fad2-F wt
841	CCTCACTACGATTTCGTCCGACTGGGATTGGTTGAGGGGAG				Fad2-F (TA515) Q508
841	CCTCACTACGATTTCGTCCGAGTGGGATTGGTTGAGGGGAG				Fad2-F (GA908) Q4275
	890	900	910	920	
881	CTTTGGCCACCGTTGACAGAGACTACCGAATCTTGAACAA				Fad2-D wt
881	CTTTGGCCACCGTTGACAGAGACTACCGAATCTTGAACAA				Fad2-D (GA316) IMC129
881	CTTTGGCTACCGTTGACAGAGACTACCGAATCTTGAACAA				Fad2-F wt
881	CTTTGGCTACCGTTGACAGAGACTACCGAATCTTGAACAA				Fad2-F (TA515) Q508
881	CTTTGGCTACCGTTGACAGAGACTACGAAATCTTGAACAA				Fad2-F (GA908) Q4275
	930	940	950	960	
921	GGTCTTCCACAATATCACGGACACGACGCTGGCGCATCAC				Fad2-D wt
921	GGTCTTCCACAATATCACGGACACGACGCTGGCGCATCAC				Fad2-D (GA316) IMC129
921	GGTCTTCCACAATATTACCGACACGACGCTGGCGCATCAT				Fad2-F wt
921	GGTCTTCCACAATATTACCGACACGACGCTGGCGCATCAT				Fad2-F (TA515) Q508
921	GGTCTTCCACAATATTACCGACACGACGCTGGCGCATCAT				Fad2-F (GA908) Q4275
	970	980	990	1000	
961	CTGTTCTCGACCATGCCGCAATTATCATGCGATGGAAGCTA				Fad2-D wt
961	CTGTTCTCGACCATGCCGCAATTATCATGCGATGGAAGCTA				Fad2-D (GA316) IMC129
961	CTGTTCTCCACGATGCCGCAATTATCACGCGATGGAAGCTA				Fad2-F wt
961	CTGTTCTCCACGATGCCGCAATTATCACGCGATGGAAGCTA				Fad2-F (TA515) Q508
961	CTGTTCTCCACGATGCCGCAATTATCACGCGATGGAAGCTA				Fad2-F (GA908) Q4275
	1010	1020	1030	1040	
1001	CGAAGGCGATAAAGCCGATACTGGGAGAGTATTATCAGTT				Fad2-D wt
1001	CGAAGGCGATAAAGCCGATACTGGGAGAGTATTATCAGTT				Fad2-D (GA316) IMC129
1001	CCAAGGCGATAAAGCCGATACTGGGAGAGTATTATCAGTT				Fad2-F wt
1001	CCAAGGCGATAAAGCCGATACTGGGAGAGTATTATCAGTT				Fad2-F (TA515) Q508
1001	CCAAGGCGATAAAGCCGATACTGGGAGAGTATTATCAGTT				Fad2-F (GA908) Q4275
	1050	1060	1070	1080	
1041	CGATGGGACGCCGGTGGTTAAGGCGATGTGGAGGGAGGCG				Fad2-D wt
1041	CGATGGGACGCCGGTGGTTAAGGCGATGTGGAGGGAGGCG				Fad2-D (GA316) IMC129
1041	CGATGGGACGCCGGTGGTTAAGGCGATGTGGAGGGAGGCG				Fad2-F wt
1041	CGATGGGACGCCGGTGGTTAAGGCGATGTGGAGGGAGGCG				Fad2-F (TA515) Q508
1041	CGATGGGACGCCGGTGGTTAAGGCGATGTGGAGGGAGGCG				Fad2-F (GA908) Q4275
	1090	1100	1110	1120	
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA				Fad2-D wt
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA				Fad2-D (GA316) IMC129
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA				Fad2-F wt
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA				Fad2-F (TA515) Q508
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA				Fad2-F (GA908) Q4275

FIG. 2D

	1130	1140	1150
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		

Fad2-D wt
 Fad2-D (GA316) TMC129
 Fad2-F wt
 Fad2-F (TA515) Q508
 Fad2-F (GA908) Q4275

FIG. 2E

105270-4067459

	10	20	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Asn	Fad2-D wt	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Asn	Fad2-D (GA316) IMC129	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Fad2-F wt	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Fad2-F (TA515) Q508	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Fad2-F (GA908) Q4275	
	30	40	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-D wt	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-D (GA316) IMC129	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-F wt	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-F (TA515) Q508	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-F (GA908) Q4275	
	50	60	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-D wt	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-D (GA316) IMC129	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-F wt	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-F (TA515) Q508	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-F (GA908) Q4275	
	70	80	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-D wt	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-D (GA316) IMC129	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-F wt	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-F (TA515) Q508	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-F (GA908) Q4275	
	90	100	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-D wt	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-D (GA316) IMC129	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-F wt	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-F (TA515) Q508	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-F (GA908) Q4275	
	110	120	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-D wt	
301	Trp Val Ile Ala His Lys Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-D (GA316) IMC129	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-F wt	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-F (TA515) Q508	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-F (GA908) Q4275	
	130	140	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-D wt	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-D (GA316) IMC129	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-F wt	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-F (TA515) Q508	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-F (GA908) Q4275	

	150	160	
421	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	Fad2-D wt	
421	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	Fad2-D (GA316)	IMC129
421	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	Fad2-F wt	
421	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	Fad2-F (TA515)	Q508
421	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	Fad2-F (GA908)	Q4275
	170	180	
481	Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val	Fad2-D wt	
481	Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val	Fad2-D (GA316)	IMC129
481	Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val	Fad2-F wt	
481	Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr His Asn Asn Pro Leu Gly Arg Thr Val	Fad2-F (TA515)	Q508
481	Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val	Fad2-F (GA908)	Q4275
	190	200	
541	Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly	Fad2-D wt	
541	Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly	Fad2-D (GA316)	IMC129
541	Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly	Fad2-F wt	
541	Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly	Fad2-F (TA515)	Q508
541	Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly	Fad2-F (GA908)	Q4275
	210	220	
601	Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp	Fad2-D wt	
601	Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp	Fad2-D (GA316)	IMC129
601	Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp	Fad2-F wt	
601	Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp	Fad2-F (TA515)	Q508
601	Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp	Fad2-F (GA908)	Q4275
	230	240	
661	Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu	Fad2-D wt	
661	Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu	Fad2-D (GA316)	IMC129
661	Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu	Fad2-F wt	
661	Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu	Fad2-F (TA515)	Q508
661	Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu	Fad2-F (GA908)	Q4275
	250	260	
721	Tyr Arg Tyr Ala Ala Val Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu	Fad2-D wt	
721	Tyr Arg Tyr Ala Ala Val Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu	Fad2-D (GA316)	IMC129
721	Phe Arg Tyr Ala Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu	Fad2-F wt	
721	Phe Arg Tyr Ala Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu	Fad2-F (TA515)	Q508
721	Phe Arg Tyr Ala Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu	Fad2-F (GA908)	Q4275
	270	280	
781	Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu	Fad2-D wt	
781	Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu	Fad2-D (GA316)	IMC129
781	Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu	Fad2-F wt	
781	Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu	Fad2-F (TA515)	Q508
781	Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu	Fad2-F (GA908)	Q4275

FIG. 3B

	290	300	
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-D wt	
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-D (GA316)	IMC129
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-F wt	
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-F (TA515)	Q508
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-F (GA908)	Q4275
	310	320	
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-D wt	
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-D (GA316)	IMC129
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-F wt	
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-F (TA515)	Q508
901	Asp Tyr Glu Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-F (GA908)	Q4275
	330	340	
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-D wt	
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-D (GA316)	IMC129
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-F wt	
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-F (TA515)	Q508
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-F (GA908)	Q4275
	350	360	
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-D wt	
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-D (GA316)	IMC129
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-F wt	
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-F (TA515)	Q508
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-F (GA908)	Q4275
	370	380	
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-D wt	
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-D (GA316)	IMC129
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-F wt	
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-F (TA515)	Q508
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-F (GA908)	Q4275
1141	Asn Asn Lys Leu ter	Fad2-D wt	
1141	Asn Asn Lys Leu ter	Fad2-D (GA316)	IMC129
1141	Asn Asn Lys Leu ter	Fad2-F wt	
1141	Asn Asn Lys Leu ter	Fad2-F (TA515)	Q508
1141	Asn Asn Lys Leu ter	Fad2-F (GA908)	Q4275

FIG. 3C